

Claims:

1. A polyolefin molding composition which has a broad, bimodal or multimodal melting range in the DSC spectrum, where the melting range maximum is between 5 120 and 165°C, the half-intensity width of the melting peak is broader than 10°C and the width determined at quarter peak height is greater than 15°C.

10 2. *The* ~~A~~ polyolefin molding composition as claimed in ^A claim 1, wherein the half-intensity width of the crystallization peak is greater than 4°C and the width of the crystallization peak determined at quarter peak height is greater than 6°C.

15 3. A polyolefin molding composition as claimed in claim 1, which additionally contains nucleating agents, stabilizers, antioxidants, UV absorbers, light stabilizers, metal deactivators, free-radical scavengers, fillers and reinforcing agents, compatibilizers, plasticizers, lubricants, emulsifiers, 20 pigments, optical brighteners, flameproofing agents, antistatics or blowing agents.

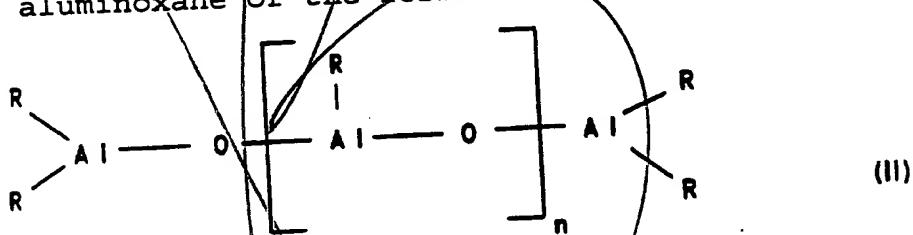
25 4. A process for the preparation of a ~~polyolefin~~ molding composition as claimed in claim 1, by mixing at least two polyolefins of different melting points, where the melting points of at least two of the polyolefins must differ by at least 5°C, the viscosity indices are greater than $VI = 10 \text{ cm}^3/\text{g}$ and the molecular weights M_w are greater than 5000 g/mol.

30 5. A process for the preparation of a polyolefin molding composition as claimed in ~~claim 1, by direct polymerization or copolymerization of at least two polyolefins of different melting point, where the melting points must differ by at~~ 120, 105

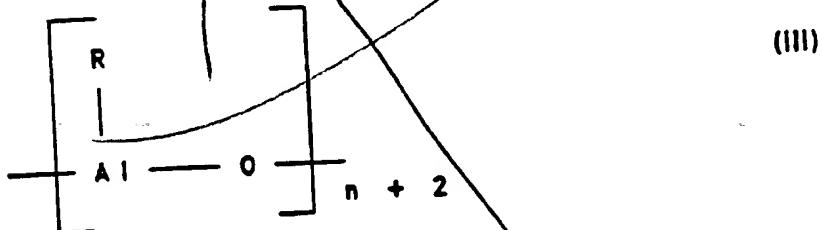
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least 5°C.

A 6. The process as claimed in claim 5, wherein the olefins have the formula $R^aCH=CHR^b$, in which R^a and R^b are identical or different and are a hydrogen atom or an alkyl radical having 1 to 14 carbon atoms, or R^a and R^b , together with the atoms connecting them, can form a ring, and are polymerized at a temperature of from -60 to 200°C, and a pressure of from 0.5 to 100 bar, in solution, in suspension or in the gas phase, in the presence of a catalyst, where the catalyst comprises at least two transition-metal components (metallocenes) and an aluminoxane of the formula II



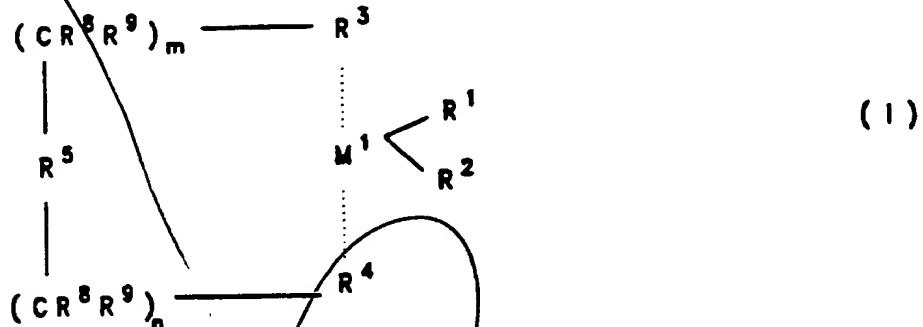
for the linear type and/or of the formula III



15 for the cyclic type, where, in the formulae II and III, the radicals R may be identical or different and are a C_1-C_6 -alkyl group, a C_1-C_6 -fluoroalkyl group, a C_6-C_{18} -aryl group, a C_6-C_{18} -fluoroaryl group or hydrogen, and n is an integer from 0 to 50, and the aluminoxane component may additionally contain a compound of the formula AlR_3 ,

20 where the transition-metal component used comprises

~~at least two metallocenes of the formula I:~~



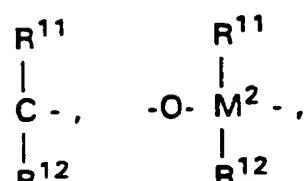
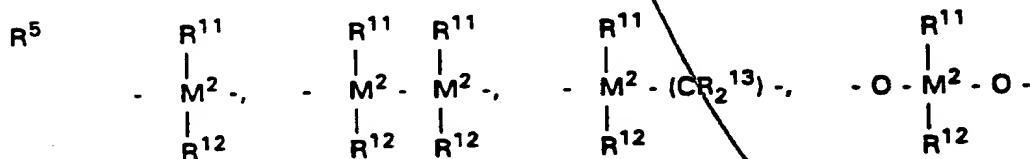
in which

M¹ is Zr, Hf or Ti,

R¹ and R² are identical or different and are a hydrogen atom, a C₁-C₁₀-alkyl group, a C₁-C₁₀-alkoxy group, a C₆-C₁₀-aryl group, a C₆-C₁₀-aryloxy group, a C₂-C₁₀-alkenyl group, a C₇-C₄₀-arylalkyl group, a C₇-C₄₀-alkylaryl group, a C₈-C₄₀-arylalkenyl group or a halogen atom,

R³ and R⁴ are identical or different and are a monocyclic or polycyclic, unsubstituted or substituted hydrocarbon radical which, together with the metal atom M¹, can form a sandwich structure,

R⁵ is



$\Rightarrow R^{11}$, $=AlR^{11}$, $-Ge-$, $-Sn-$, $-O-$, $-S-$, $=SO$, $=SO_2$, $=NR^{11}$, $=CO$,

~~=PR¹¹ or =P(O)R¹¹,~~

~~where~~

~~R¹¹, R¹² and R¹³ are identical or different and are a hydrogen atom, a halogen atom, a C₁-C₁₀-alkyl group, a C₁-C₁₀-fluoroalkyl group, a C₆-C₁₀-aryl group, a C₆-C₁₀-fluoroaryl group, a C₁-C₁₀-alkoxy group, a C₂-C₁₀-alkenyl group, a C₇-C₄₀-arylalkyl group, a C₈-C₄₀-arylalkenyl group or a C₇-C₄₀-alkylaryl group, or R¹¹ and R¹² or R¹¹ and R¹³, in each case together with the atoms connecting them, form a ring, and~~

~~M² is silicon, germanium or tin,~~

~~R⁸ and R⁹ are identical or different and are as defined for R¹¹,~~

~~m and n are identical or different and are zero, 1 or 2, where m plus n is zero, 1 or 2.~~

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7. The process as claimed in claim ~~5~~, wherein

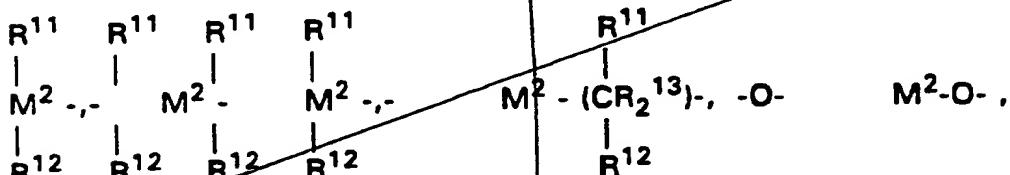
~~M¹ is Zr or Hf,~~

~~R¹ and R² are identical or different and are a hydrogen atom, a C₁-C₃-alkyl group, a C₁-C₃-alkoxy group, a C₆-C₈-aryl group, a C₆-C₈-aryloxy group, a C₂-C₄-alkenyl group, a C₇-C₁₀-arylalkyl group, a C₈-C₁₂-alkylaryl group, a C₈-C₁₂-arylalkenyl group or chlorine,~~

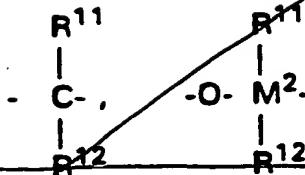
~~R³ and R⁴ are identical or different, monocyclic or polycyclic, unsubstituted or substituted hydrocarbon radicals which, together with the metal atom M¹, can form a sandwich structure,~~

~~R⁵ is~~

~~R⁵~~



*Sub
A2
Comp 5*



= BR^{11} , = AlR^{11} , -Ge-, -Sn-, -O-, -S-, = SO_2 , = NR^{11} ,
=CO, = PR^{11} or = $P(O)R^{11}$, where R^{11} , R^{12} and R^{13} are
5 identical or different and are a hydrogen atom, a
halogen atom, a C_1 - C_4 -alkyl group, CF_3 group, a C_6 - C_8 -
aryl group, a pentafluorophenyl group, a C_1 - C_4 -alkoxy
group, a C_2 - C_4 -alkenyl group, a C_7 - C_{10} -arylalkyl
group, a C_8 - C_{12} -arylalkenyl group or a C_7 - C_{12} -alkyl-
aryl group, or R^{11} and R^{12} or R^{11} and R^{13} , in each case
together with the atoms connecting them, form a
10 ring,

M^2 is silicon or germanium,
 R^8 and R^9 are identical or different and are as
defined for R^{11} ,
m and n are identical or different and are zero or
15 1, where m plus n are zero or 1.

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8. The process as claimed in claim 5, wherein
20 M^1 is zirconium or hafnium, R^1 and R^2 are identical
and are methyl or chlorine,
 R^4 and R^3 are indenyl, cyclopentadienyl or fluorenyl,
where these ligands may carry additional substituents
25 as defined for R^{11} , R^{12} and R^{13} , where the
substituents may be different and, with the atoms
connecting them, may also form rings,

R^5 is a



radical, and n plus m are zero or 1.

9. The method of using a molding composition as claimed in

claim 1 for the production of
moldings.

10. A molding which can be produced from a molding
composition as claimed in claim 1.

5

add
A¹
&
B²

add
C¹

ADD
E³

weld
T⁴